ABSTRACT

TARGETING THE "PRE-SMOKERS": A REVIEW OF THREE FACTORS ASSOCIATED WITH ADOLESCENT SMOKING HABITS

By

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The purpose of this paper is to evaluate external factors in relation to their effect on adolescent smoking. The author measured smoking rates against variables of family and peer influence, community and school programs, and celebrity role models and the media. Three hypotheses were developed: (1) the less adult supervision there is after school, the higher chance adolescents have of smoking; (2) adolescents with lower levels of school support are more likely to smoke; (3) adolescents with entertainer role models have a higher chance of smoking. The ANOVA test was used to evaluate data from the California Health Interview Survey 2012. The results from this study produced slight but not statistically significant relationships except for celebrity role models and adolescent smoking rates. Studies such as these need to continue in order to decrease the percentage of teens that use tobacco and prevent them from continuing to smoke into adulthood.

TARGETING THE "PRE-SMOKERS": A REVIEW OF THREE FACTORS ASSOCIATED WITH ADOLESCENT SMOKING HABITS

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BACKGROUND

Introduction

Smoking among adolescents has been an issue of concern for clinicians, researchers, and parents alike for many decades. Various attempts have been made through media campaigns, smoking cessation programs, and government regulations in order to curb the presence of tobacco use among adolescents aged 12-17. Regardless of these efforts, smoking is still prevalent among this age group and is a predictive factor of smoking into adulthood and tobacco addiction. There is no doubt that smoking and even second-hand smoke are detrimental to one's health status and can cause addiction, lung cancer, chronic obstructive pulmonary disease, and other physical harms that can lead to death. It is important to understand the factors associated with smoking initiation among adolescents in order to expose the risk factors that lead to habitual smoking as an adult. The ability for an adolescent to judge the harmful effects of smoking relies on both internal and external factors such as demographic information, genetic and biological dispositions, social atmosphere, and exposure to cigarettes. By identifying the factors that cause adolescents to smoke regularly or even experiment with tobacco, researchers can narrow their focus on reform initiatives in hopes of decreasing adolescent smoking rates.

For the purpose of this paper, the author will focus on family and peer influences on smoking initiation, school and community programs aimed at smoking prevention, and smoking in the media and among celebrity role models. The first portion of this paper will take a look at the current body of research associated with adolescent smoking in relation to family and peer support, school and community programs, and entertainer role models and the media. Next, the methods of research will be presented including the hypotheses, study design, sample size, and data collection. The following section will provide the results of the study and an analysis of the three topics of interest in relation to the hypothesis being studied. The paper will conclude with a discussion of the three factors being measured (family and peer influences, school and community programs, celebrity role models and the media) and whether or not they affect smoking habits among adolescents.

Literature Review

Although drastically lower than the mid-1990s, smoking rates among adolescents are still high. According to the Centers for Disease Control and Prevention, each day "more than 3,200 people younger than 18 years of age smoke their first cigarette, and an estimated 2,100 youth and young adults who have been occasional smokers become daily cigarette smokers" (2014b, p. 2). This means that the chance of becoming a smoker in adulthood largely weighs on the smoking choices made during adolescence. The smoking status of any adolescent can be influenced by the exposure to cigarette use through parents, peers, movies, advertisements, video games, and celebrity role models. Tobacco has remained a vast health concern among adults and those who use cigarettes suffer from "the leading cause of preventable morbidity and mortality in the United

States" (Morean, et al., 2014, p. 1). Smoking is associated with many severe health problems such as pulmonary diseases, cancer, cardiovascular and metabolic disease, addiction, and perinatal conditions (Razaz-Rahmati, Nourian, & Okoli, 2011). In the United States alone, there are more than 480,000 deaths annually due to tobacco usage with male deaths (278,544 deaths) outnumbering female deaths (201,773 deaths; CDC, 2014a). Smoking is also the "predominant risk factor for lung cancer, accounting for about 80% of lung cancer cases in men and 50% in women worldwide" (Woodgate & Kreklewetz, 2012, p. 965). Statistics like these highlight a need for reform and immediate action against this preventable killer that so many victims suffer from.

A promising solution to this global bad habit is to target the youth and control their smoking behaviors. While smoking levels have decreased, adolescents are still experimenting with tobacco or still considering experimenting with a tobacco product. According to Veeranki, Mamudu, Anderson, and Zheng (2013), annual tobacco-related deaths worldwide will grow to eight million by 2030. It is important to target the young smokers before they take on the habit, which is often during their adolescent years. Adolescents are sensitive to trait impulsivity, which is defined as a "predisposition toward rapid, unplanned action…with diminished regard to negative consequences" (Morean et al., 2014, p. 1). They are frequently exposed to the various types of tobacco products through personal and social factors and are willing to try new things without considering the health effects or high chance of addiction. Table 1 displays 10 types of tobacco products and their usage rates among male and female high school students in 2012.

TABLE 1. Use of Tobacco Products (CDC, 2014b)

Estimates of Current Use* of 10 Tobacco Products Among High School Students in 2012			
Tobacco Product	Overall	Females	Males
Any tobacco product†	23.3%	18.1%	28.3%
Cigarettes	14.0%	11.7%	16.3%
Cigars	12.6%	8.4%	16.7%
Smokeless tobacco	6.4%	1.5%	11.2%
Hookahs	5.4%	4. 5%	6.2%
Pipes	4.5%	3.2%	5.8%
Electronic cigarettes	2.8%	1.9%	3.7%
Snus	2.5%	0.9%	3.9%
Kreteks	1.0%	0.5%	1.5%
Bidis	0.9%	0.5%	1.3%
Dissolvable tobacco	0.8%	0.6%	1.0%

Cigarette smoking has become the most dominant and visible form of tobacco usage. Interestingly enough, electronic cigarette (e-cigarette) suppliers have raised concern among anti-smokers with their enticing flavors and promise to make smokers quit. Table 1 shows that 2.8% of high school students who smoke use e-cigarettes compared to 14% who smoke cigarettes. As one can imagine, e-cigarettes are a popular trend among adolescents who are able to choose their favorite flavor and follow the newest trend. It would be noteworthy to see the effect of e-cigarette suppliers and their "vapor" stores on the usage rates of various tobacco products among current-day high school smokers. The CDC states that "the number of never-smoking youth who used e-cigarettes increased from 79,000 in 2011 to more than 263,000 in 2013" (2014b). This new fad can pose a problem among adolescents and more research should be conducted as the health effects are unknown and the growth of the e-cigarettes is rapidly escalating.

Table 1 should be updated annually in order to determine the rate of growth in e-cigarette usage among adolescents. For the purpose of this paper, e-cigarettes will not be evaluated in regards to tobacco use among adolescents but this topic should be studied further as an area of concern.

Besides the popularity of e-cigarettes, there are many factors that have been studied in relation to adolescent smoking as well as many mixed opinions on how reliable available research is. A youth's mind is easily formed by its habitat and both internal and external influences can easily alter their habits or opinions. The addictive nature of nicotine poses a threat to the psychological needs of an adolescent who is told by their peers and favorite celebrities that smoking is cool and acceptable. In 1973, Claude Teague of the R.J. Reynolds Tobacco Company referred to this adolescent population, whom he thought could be easily persuaded to smoke, as "pre-smokers." The temptation to smoke is everywhere and it is up to policy makers, school officials, parents, and the general public to help identify the major causes of adolescent smoking and eradicate them.

Family and Peer Influence

The influence of family and peer groups during adolescence helps shape an individuals into who they are as an adults. The ages of 12-17 are a time of "pronounced self-concept development" where "behavior-specific self-identities" are molded based on their surrounding environments (Hertel & Mermelstein, 2012, p. 467). Looking for someone they can identify with, adolescents often mimic the habits of their family and peers so that they can be accepted into a group. Tobacco use has also been identified as a coping mechanism which teens often turn to when certain family stressors affect their

early years. Research has found that "early childhood abuse, neglect or other household dysfunction, or other stressful occurrences can lead to increased smoking and drinking" (Fletcher & Sindelar, 2012, p. 100). Broken homes and substance abuse by a parent can cause a child to believe that this is the best way to cope with their daily stressors. Smoking acts as both a relational factor and a learned behavior. It has been shown that children that are raised around substance abuse such as smoking are surrounded by conflict between relatives and often resort to the same addictions of their close ones (Woodgate & Kreklewetz, 2012).

Household structure is a major area of interest for researchers and is also an influential factor in affecting the development of adolescent risk behaviors such as smoking. On one hand, families that strive to protect their child from smoking and teaching them about the dangers associated with this behavior often find no reason to begin smoking. Supportive parents with strict anti-smoking rules act as a protective factor for adolescents and can dissuade them from trying tobacco products (Woodgate & Kreklewetz, 2012). Some of the family factors associated with non-smoking adolescents are parental monitoring, parent-adolescent connectedness, and the presence of rules and consequences for smoking (Mahabee-Gittens, Xiao, Gordon, & Khoury, 2012). On the other hand, a lack of familial support and discipline can expose adolescents to smoking and other risky behaviors. Researchers have found that "adolescents from single-parent families or those who reside in nonparental households have significantly higher levels of initiating smoking … than those who live with both parents, who are inclined to receive higher levels of parental control" (Razaz-Rahmati, et al., 2011, p. 192). Adolescents who are exposed to stressors such as a single-parent household, divorce, abuse, and other

misfortunes need to be the target of anti-smoking reform. Parents and other adult influences such as close relatives and family physicians should provide coping mechanisms to distract them from the lure of tobacco use and to prevent smoking initiation (Hum, Robinson, Jackson, & Ali, 2011).

Another important area of concern with smoking among adolescents is the influence of peer groups and social networks. The relevance of school and friend groups during the teenage years is a heavily studied area in the fields of psychology, sociology, communications, and child development. Furthermore, there are "uniquely social aspects of adolescent smoking and other substance use in that other adolescents provide access, opportunity, and reinforcement" (Simons-Morton & Farhat, 2010, p. 191). After identifying with their familial self, an adolescent then branches out to find their social self among others who share similar traits and interests (Hertel & Mermelstein, 2012). Figure 1 displays the concept of social influences on adolescent smoking.

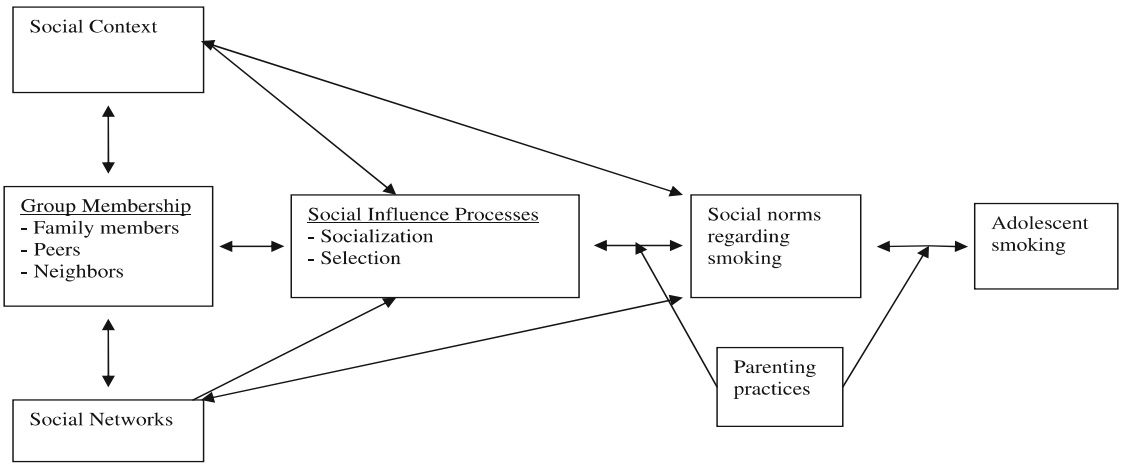

FIGURE 1. Social influences on adolescent smoking (Simons-Morton, & Farhat 2010).

These interactions amongst peer groups affect an adolescent's view on what is normal and if someone in the peer group begins smoking, then the rest of the group is likely to follow. It is a common consensus among scholars that there are "positive associations between peer smoking and future adolescent smoking and … that peer behavior affects initiation, progression, and trajectories" (Simons-Morton & Farhat, 2010, p. 195). This fact is important for school and communities to work together towards smoking cessation among adolescents so that the chances of other adolescents smoking do not rise. Teens should be targeted for smoking cessation programs because those who choose to smoke will also try to quit. Nonetheless, success rates of these programs are critically low with "quit rates for teens ranging from 6.2% to 12.2%" (Hum, et al., 2011, p. 1369). With facts like these, the number of smoking adults is logically related to teen smoking and needs to be expertly examined in order for smoking rates to fall.

One interesting study examines the concept of social networking and its effect on adolescent smoking. The researchers believed that "adolescents may exhibit fewer inhibitions in their display of risky behaviors such as smoking or alcohol use in an online context because the repercussions that come with face-to-face contact are minimized" (Huang, Soto, Fujimoto, & Valente, 2014, p. 51). These types of social platforms (e.g., Facebook, Twitter, and Instagram) have introduced teens to a whole new way of interacting with their peers. Through the exchange of photos and constant posts about their daily activities, a teenagers' risky behaviors are publically displayed which increases the likelihood of their peers to follow the same risky behaviors (Huang et al., 2014). With new trends such as social media sites, researchers need to remain aware of

the constantly changing atmosphere in which adolescents develop and continue to study the effects of the social surroundings.

It has been established that influence of family and peer groups play a large role in shaping an adolescent's behaviors especially when it comes to risky ones such as smoking. Whether it is exposure from parents or peers, adolescents have been shown to copy their surroundings and take on the same tendencies as those they are close to. This paper will examine one of the connections between adolescents and their family in order to unveil the root causes of smoking initiation. When it comes to family influence, it is valuable to measure factors such as parental smoking status, whether or not smoking is allowed in the home, anti-smoking support, and discipline on using any tobacco product. Similarly, peer groups should be evaluated in terms of how many friends of an adolescent smoke, whether they post smoking pictures on the Internet, and what their friends think of using tobacco. All these smoking indicators should be further examined to prove that smoking as an adolescent dramatically increases the chances of continuing smoking into adulthood.

School and Community Programs

As with the structure of family and peer groups, schools and communities shape young individuals into who they are as adults. Private schools and public schools enforce varying policies regarding smoking or tobacco use while rural and urban areas hold different laws and regulations. School is where adolescents age 12-17 form social groups of friends who then continue their relationship outside of school and into the greater community. Scholars agree that the larger environment is vital to the development of individual behavior and that "social determinants of health consistently show an

association between neighborhood factors and individual health" (Lovato, et al., 2010, p. 507). Researchers can help identify the contributing factors on teen smoking from school and community settings by conducting studies among various populations.

Both middle school and high school students spend a large portion of their day on campus and interact with their classmates for a majority of their week. It would be hard to deny that the organizational structure of any particular school directly affects the way students are regulated and monitored. If adolescents believe that there are little repercussions from a bad behavior, they will continue to do so, while students who are fearful of suspension or being expelled will be hesitant to try said behavior. Lovato et al. (2010) believe there are three important characteristics of schools with low smoking rates: high prices of cigarettes in close proximity, tobacco prevention education easily available, and zero-tolerance policies for students. Same as with parents, schools can act as either a protective or permissive factor in adolescent smoking. School officials have the authority to enforce strict no-smoking rules for both faculty and students in addition to providing educational materials on smoking cessation. The current body of research shows that "schools with smokefree environments have a lower prevalence of smoking and less overall cigarette consumption than schools with minimal guidelines" (Lovato et al., 2010, p. 507). One study reports that at least 61.8% of students from three middle schools in Connecticut expressed an interest in an "incentive-based" smoking cessation program (Morean, et al., 2014, p. 4). However, some critics believe that this factor is inconclusive and has not had consistent results to prove that stricter school policies and smoking cessation programs actually contribute to smoking abstinence among adolescents. Researchers should continue to evaluate various school smoking cessation

programs in relation to different areas, cultural backgrounds, and types of school systems. For example, some schools in wealthier areas have the advantage of access to the Internet and social media. Researchers have suggested school-based prevention programs that are facilitated on a computer or via the Internet rather than in a classroom or group setting (Champion, Newton, Barrett, & Teesson, 2013). Champion et al. (2013) found that students who participated in the study were not only able to overcome traditional implementation obstacles but also enjoyed the electronic platform. By examining these new means of anti-smoking programs in schools, researchers can gain a better understanding of what tools are most successful in decreasing smoking rates among adolescents.

In order for the school systems to be strict on smoking policies, the communities in which they reside must also be consistent with the fight against teen smoking. As with the previous variables, community surroundings will directly influence how an adolescent develops into an adult. Despite laws to prevent illegal sales to underage smokers and increase tobacco taxes, 1 in 12 adolescents still smoke as of 2010 and this number will continue to increase if stricter measures are not taken (Substance Abuse and Mental Health Services Administration, 2012). Many community characteristics can come into account when it comes to an adolescent's access to tobacco products such as the number of tobacco retailers located in nearby schools and residences, the policies on carding for tobacco purchases, and the presence of law enforcement in the form of fines and penalties. Research has found that 62% of all illegal tobacco sales are within one-mile proximity of a school and that 20% of the billboards within 2,000 feet of a school contain tobacco advertising (Adams, Jason, Pokorny, & Hunt, 2013). Tobacco usage

develops through various stages—"preparation, initiation, experimentation, regular smoking, and addiction"—and community officials should evaluate each stage in order to create effective prevention programs (Veeranki et al., 2014, p. 145). Through both state and city level regulations, researchers are calling for more uniformed compliance with tobacco sales and other access restrictions (Grucza, et al., 2013). Some cities, like Manhattan Beach, California, have even gone so far as to ban smoking and vapor cigarettes in public areas through their Breath Free campaign (Dryden, 2014). Researchers support the fact that "the implementation of smoke-free workplace and public space laws has been associated with the voluntary adoption of smoke-free homes" (Pierce, White, & Emery, 2011, p. 261). In order to curb adolescent smoking rates, public health strategies similar to 'Breathe Free" need to be present through community policies and regulations in order for adolescents who are never-smokers to remain so.

The tighter the restraints on smoking regulations, the less chance adolescents have of gaining access to tobacco products (Farrelly, Arnold, Juster, & Allen, 2013). Certain measures have already been studied among researchers such as the access youth have to tobacco, increased taxes on cigarettes, and banning smoking in public areas. Grucza et al. (2013) based their study off of nine independent variables that were tested against youth access to tobacco products: signage requirements, vending machine restrictions, inspection requirements, graduated penalties, identification requirements, repackaging restrictions, statewide enforcement activity, free distribution restrictions, and clerk intervention requirements. They found that no single factor significantly affected adolescent smoking but multiple policies together created small changes in smoking prevalence. However, one study found that "for every US$0.10 increase in the price/pack

of cigarettes, youth smoking declines by approximately 14%" (Pierce, et al., 2011, p. 260). Studies need to continue on both city and state levels to identify what factors truly influence teens more than the other and what measures need to be taken to decrease adolescent smoking rates.

Entertainer Role Models and the Media

The presence of media is strong in a society filled with television, movies, social networking sites, and handheld devices. For the purpose of this paper, entertainers will be defined as movie and television actors and actresses. Adolescents admire celebrity entertainers in film, television, and music and often mimic the habits of those performers that they consider role models. Consequently, multiple studies have found a strong correlation between the influence of smoking in the movies and adolescent smoking rates (e.g., Heatherton & Sargent, 2009; Soneji, Lewis, Tanski, & Sargent, 2012; Tanski, Stoolmiller, Gerrard, & Sargent, 2012). Heatherton and Sargent (2009) reported that 70% of movies made in the United States have characters who smoke cigarettes. Out of 1,000 movies studied, 500 movies conveyed nearly 14 billion smoking impressions to adolescents aged 10-14 (Heatherton & Sargent, 2009). Characters that use cigarettes on screen act as free promotion for tobacco companies who, in turn, gain consumers based on celebrity influences and popular films. These characters that adolescents admire tend to use tobacco when they are sad, happy, and relaxed, or need to relieve stress. Additionally, those actors who smoke on screen have been "depicted as enjoying higher socioeconomic status, increased romantic and sexual activity, and an overall more positive nature" (Stern & Morr, 2013, p. 181). Tobacco companies are notorious for using celebrity role models to entice younger audiences while anti-smoking groups have

been infiltrating the digital web with blunt warnings to smokers of all ages. Big tobacco companies are able to manipulate their customers through retailer placement, celebrity endorsements, advertisements, and warning labels on cigarette packages. For instance, well-known rapper and actor, Snoop Dog, announced a new brand of small cigars in 2012 called Executive Branch. A study by Sterling, et al. (2013) found that 82.4% of the participants stated that seeing the Executive Branch advertisements with Snoop Dog made them want to try the product. Although the causes of adolescent smoking are complex, many researchers believe that celebrity influences play a role in promoting tobacco use. Researchers at Dartmouth Medical School produced a study that found a strong correlation between characters that smoke cigarettes and adolescent tobacco use ("Do Celebrity Role Models," 2012). With all this evidence, it becomes clear that anti-smoking advocates should target the celebrities and producers that incorporate smoking into their media and stop them from using tobacco products.

To deter adults and adolescents from these enticing promotions, anti-smoking groups are enforcing programs such as We Card and endorsing campaigns such as The Truth. Even though measures have been taken by large organizations such as World Health Organization (WHO) and the Food and Drug Administration (FDA), "only 5% of the world's population is covered by comprehensive bans on tobacco advertising, promotion, and sponsorship" (Freeman, Brucks, Wallendorf, & Boland, 2008, p. 36). By using images of sex, glamour, and acceptance, tobacco companies are directly marketing to youth in order to entice them into becoming life-long users of their brand. Researchers continue to study the way adolescents are affected by continuous exposure to tobacco ads and how it influences their "psychosocial mechanisms" such as self-conflict and coping

(Freeman et al., 2008, p. 37). Tobacco companies use advertising tools (e.g., billboards, commercials, magazine ads, and window displays) displaying social acceptance and self-identity to specifically target this fragile population. However, findings on smoking advertisements and their relationship to adolescent smoking perceptions are mixed and researchers should focus on what images significantly cause adolescents to become addictive smokers (Hanewinkel, Isensee, Sargent, & Morgenstern, 2010).

In addition to marketing, tobacco companies and promoters also influence the number of tobacco retailers in a given area and the packaging on tobacco products. It has been established by research that "stores located near schools with a higher smoking prevalence had significantly lower cigarettes prices, fewer government-sponsored health warnings, and more in-store tobacco promotions, when compared to schools with lower smoking prevalence" (Adams et al., 2013, p. 115). After strong accusations of illegal marketing to youth, tobacco companies enacted the We Card program as a means to prevent youth smoking. This campaign funded by the tobacco industry has become a visible presence among tobacco retailers but researchers have found that the undermining goals are to deter the "enforcement of existing laws, prevent passage of effective state legislation, establish the tobacco industry as a 'partner' with state agencies, and burnish the public images of tobacco companies and retailers" (Apollonio & Malone, 2010, p. 1188). This is yet another example of how the tobacco industry manipulates adolescents into ignoring the warning signs of smoking. Adolescents subconsciously absorb the marketing tools of both tobacco and anti-smoking companies in their years of mental development and it is important to increase the presence of government-sponsored campaigns in order to curb smoking rates.

After examining the current literature available on adolescent smoking, it is clear that many factors affect smoking rates. Whether through family and peer influence, school and community programs, or entertainer role models and the media, researchers have identified a decrease in the presence of teen smoking but the exact reasons as to this trend are mixed. This paper will take a look at each of the three factors and examine various measures based on subcategories, which will be further explained in the following section. Despite the drop in smoking rates, there are still a number of adolescents trying or considering smoking and this paper will attempt to understand what anti-smoking efforts have been working and which have not.

CHAPTER 2

METHODOLOGY

Hypothesis and Study Rationale

The primary aim of this study is to understand which factors play the heaviest role in adolescent smoking rates among various locations and ethnicities. There are both internal and external influences that can affect whether or not a teen decides to try tobacco and whether or not they continue the habit following the initial use. It is in the hands of researchers to efficiently navigate through the plethora of factors related to adolescent smokers and uncover why it is still a prominent issue in society. This paper will not be able to touch upon all the topics mentioned in the literature review but research should continue to understand adolescent smoking and the impact of family and peer influences, school and community programs, and entertainer role models and the media. If researchers can produce strong and significant correlations between various factors, responsible parties can then tackle the issues from the source and create a culture of smoking cessation.

This paper will focus on three hypotheses that relate adolescent smoking to familial, environmental, and social downfalls. The first hypothesis will study how heavily family structure will play on adolescent smoking habits. The second hypothesis is related to the responsiveness of schools to teen smoking and their interest in patient health and safety. Finally, the third hypothesis will examine the effect of entertainer role

models and their influence on teen smoking. The hypotheses of this study are as follows: (1) Adolescents, age 12-17, with no adult supervision after school are more likely to smoke cigarettes than those who have adult supervision. (2) Students who report low levels of school support are more likely to smoke. (3) Adolescents who identify entertainer role models have a higher chance of smoking. In order to test these three hypotheses, the author will use the California Interview Health Survey (CHIS) to run statistical tests and produce results.

Overview of CHIS

The California Health Interview Survey (CHIS) has been regarded as a reliable and comprehensive tool for clinicians, researchers, and policymakers to better understand the health status of Californians. The first CHIS was distributed in 2001 and collected data from more than 55,000 households. Now the largest state health survey in the United States, CHIS conducts an annual random-digit dial (RDD) telephone survey and uses sampling methodology and exhaustive questionnaires to gather population data (California Department of Public Health, 2014). The goals of CHIS are to provide community-level statistics for California counties with populations of more than 60,000 and to gather statewide estimates for the total population including all ethnic groups (California Health Interview Survey, n.d.). CHIS is piloted by the UCLA Center for Health Policy Research in Los Angeles, California, and supported by the California Department of Public Health and the Department of Health Care Services (California Health Interview Survey, n.d.). It is modeled after the National Health Interview Survey and funding comes from federal, state, and private foundations. The data are presented

annually through health profiles, publications, and Data Access Centers (DAC) and is publically available through their website, *Ask*CHIS.

Intended to represent the diverse population, CHIS surveys children (under 12 years of age), adolescents (ages 12-17), and adults (ages 18+) from all ethnic backgrounds (e.g., Latino, Asian, American Indian, Pacific Islander; California Health Interview Survey, n.d.). It brings in detailed information from 58 counties in California and the sample size varies each year (n = 42,000-55,000; California Department of Public Health, 2014). CHIS has been known to capture data on underrepresented groups such as the LGBT and transient community, which has made it a valuable source for population data. The most recent CHIS (2011-2012) examined 44,559 households, including 42,935 adults, 2,799 adolescents, and 7,334 children (California Health Interview Survey, n.d.).

The CHIS survey being used for this study will be taken from the 2011-2012 data set. In order to achieve a continuous survey of cross-sectional data from the Californian population, CHIS made changes to their questionnaire to mirror the changes in trends. For the 2011-2012 data set, changes were made in the methodology and survey questions to adapt to the changing nature of society. Typically collected within a 9-month cycle, 2011-2012 CHIS data was collected in a 2-year cycle that began June 15, 2011, and continued until January 13, 2013 (California Health Interview Survey, n.d.). This 2-year cycle will continue for 2013-2014 and 1-year reports can be found through the Center's DACs. Another change to CHIS was the 22% increase to a larger cell phone sample with 9,152 adult interviews from the 3,028 surveyed in 2009 (California Health Interview Survey, n.d.). Additionally, a larger American Indian and Alaska Native sample was produced from those patients seen at the Indian Health Service (IHS) clinics throughout

California. Changes such as these help CHIS remain current and monitor emergent public health issues.

Sample Size and Survey Design

Data for CHIS are collected through telephone surveys that utilize a dual-frame RDD for both cell phone and landlines. Landlines account for 80% of interviewed households while 20% is from cellular phone numbers. Westat, a statistical research and large-scale sample survey company, collected data for the 2011-2012 CHIS under contract with UCLA Center for Health Policy Research. The 2011-2012 CHIS data collection produced a total of 2,799 adolescents ages 12-17 from 41 of California's most populated counties with 592 respondents from Los Angeles and 323 from San Diego with the last remaining 17 counties grouped into subunits (California Health Interview Survey, n.d.). The survey is offered in five languages: English, Spanish, Chinese (Mandarin and Cantonese), Vietnamese, and Korean. CHIS first selects a random adult in each household with an extended survey for their children followed by an interview with adolescents with permission from their parent or legal guardian. The adolescent interviews averaged about 15-23 minutes in length. Of the 2,799 adolescents interviewed, there were 1,578 Caucasians, 267 Asians, 16 Native Hawaiian/Pacific Islanders, 124 African Americans, 68 American Indian/Alaska Natives, 4,585 other single races, and 964 that identified as two or more races (California Health Interview Survey, n.d.).

Statistical Analysis

The CHIS questionnaire contains content areas including demographic information, health status, diet, physical activity, dental health, health insurance

coverage, access to health services. For the purpose of this study, we will identify only the dependent and independent variables that affect the three stated hypotheses. The dependent variable for all three hypotheses will be taken from Section E of the CHIS 2011-2012 data set. The dependent variable for this study will be, "In the past 30 days, how many days did you smoke cigarettes?" with responses ranging from none to 30 days. Other questions that were evaluated but not tested are Question (QT11_E1): "Have you ever smoked cigarettes, even 1 or 2 puffs?" The participant can answer either (1) yes, (2) no, or refuse to answer the question. Another question evaluated was how many cigarettes do you smoke per day. For this paper, the dependent variable will be, "In the past 30 days, how many days have you smoked?" since this was asked to only those who stated that they have smoked cigarettes.

Hypothesis 1 will use Question 11_L1 under Section L as an independent variable tested by the ANOVA test. This question asks how often is there an adult around during your after-school hours? The answers can range from always (1), most of the time (2), some of the time (3), almost never (4), or never (5). Hypothesis 2 will use Questions 11_L7-L12 focusing on how participants feel about their school support. The answers for each question range from "not at all true" to "very much true." The questions asked are "At my school, there is a teacher or some other adult: who really cares about me; who notices when I'm not there; who listens to me when I have something to say; who tells me when I do a good job; who always wants me to do my best; who notices when I am in a bad mood." These six school support variables are combined into one design variable in the CHIS data set, which will be used as the independent variable. The ANOVA test will also be used for Hypothesis 2. Lastly, Hypothesis 3 will use Question 11_L3 as an

independent variable: Is the person you admire a family member, an athlete, an entertainer, a teacher, a friend your own age, or someone else? Again, the ANOVA test will be used to analyze the relationship between adolescent smoking and their identified role model. The following section will examine each hypothesis in relation to the independent and dependent variables identified in Table 2.

TABLE 2. Summary of Statistical Analysis

Hypothesis	Independent Variable	Dependent Variable	Statistical Test
Adolescents who have adult supervision after school are less likely to smoke than those with no adult supervision.	Adult supervision	Number days smoked in the past 30 days	ANOVA
Students with low levels of school support are more likely to smoke	Level of school support from a teacher or other adult	Number days smoked in the past 30 days	ANOVA
Adolescents that identify entertainer role models have a higher chance of smoking.	Adolescent's choice of role model	Number days smoked in the past 30 days	ANOVA

CHAPTER 3

RESULTS

Descriptive Statistics

As mentioned in the previous chapter, the data set being examined was obtained from the CHIS 2011-2012 and analyzed with the statistical tool, SPSS. The analytical sample included a total of 2,799 adolescents who received permission from their parent or representative to participate. The participants range from age 12 to 17 with 15.4% age 12, 16.5% age 13, 17.3% age 14, 17.4% age 15, 16.8% age 16, and 16.6% age 17. The age distribution of the participants can be seen in Figure 2.

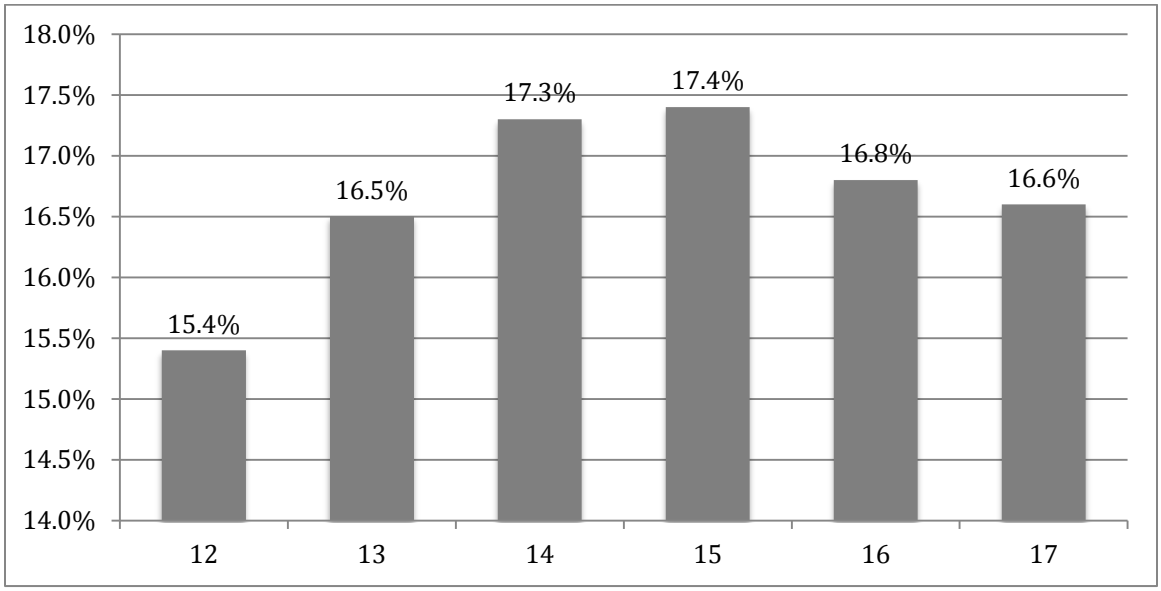

FIGURE 2. Age distribution of the sample size (N = 2,799 adolescents).

In addition to running the age frequency, gender and racial distribution of the sample size were also examined. As can be seen in Figure 3, the sample size consisted of 51.1% female adolescents and 48.9% male adolescents making the distribution almost equal. According to CHIS 2011-2012 questionnaire, race was divided into 6 categories: White (62%), Pacific Islander/Other Single Race (19.1%), Asian (9.6%), African American (3.4%), American Indian/Alaskan Native (2.5%), and more than one race (2%). Out of the 2,700 participants, 1.5% of the adults did not supply information on their racial background. These figures can be seen in Figure 4.

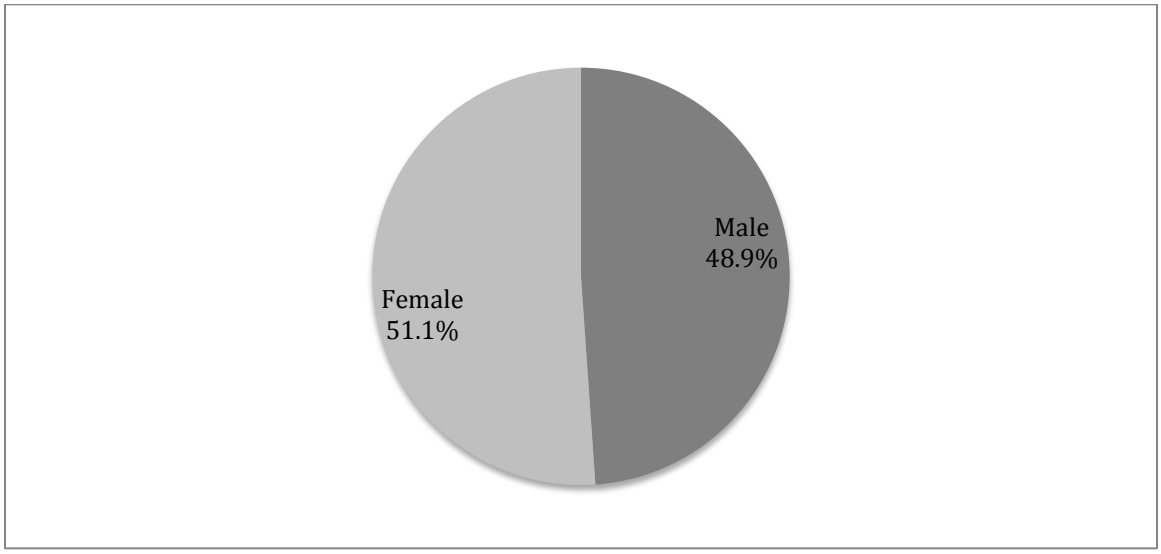

FIGURE 3. Gender distribution of sample size (N = 2,799 adolescents).

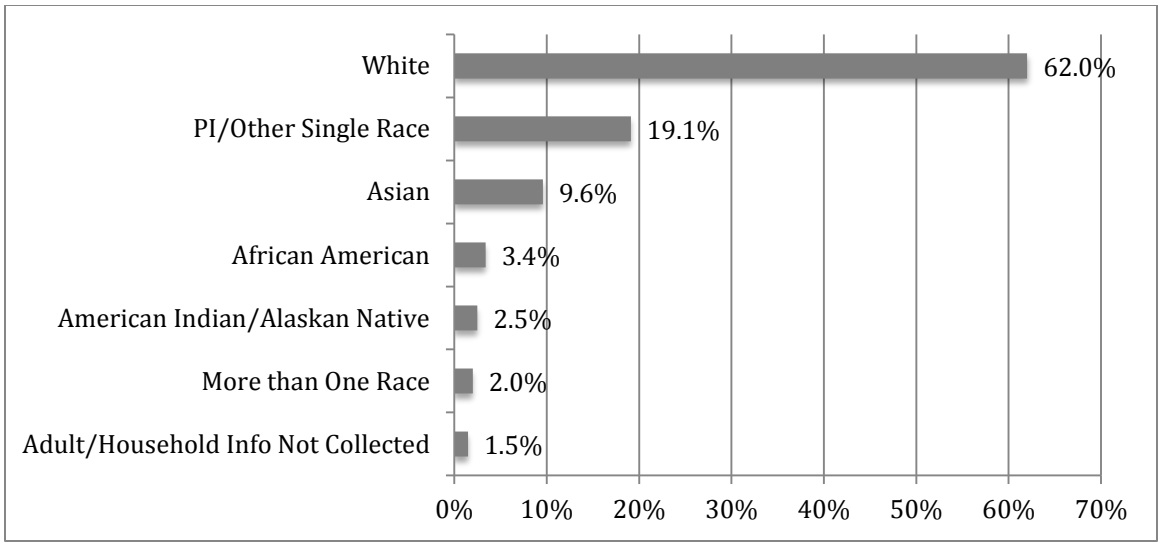

FIGURE 4. Racial breakdown of sample size (N = 2,799 adolescents).

The dependent variable in this study is the number of cigarettes an adolescent smoked within a 30 day time period. In order to evaluate teen smoking rates, the adolescents interviewed were asked the question if they have every smoked a cigarette or never smoked at all. According to the data set, 10.6% said yes while 89.4% said no. While these are reasonable response percentages, the responses may not be truly representative due to internal and external factors such as pressure to answer the question without criticism or pressure from their parents who may be listening to the phone interview. This breakdown of smokers vs. never smokers can be seen in Figure 5.

In addition to this question, CHIS asked adolescents (who are smokers) how many days they have smoked cigarettes in the past 30 days. From the 2,799 respondents, only 297 respondents answered yes to having ever smoked. Out of this sample size of 297 smokers, 69.4% answered none, 13.1% answered 1-2 days, 5.1% answered 3-5 days, 1.3% answered 6-9 days, 4.7% answered 10-19 days, 1.7% answered 20-29%, and 4.7% answered 30. This frequency can be found in Figure 6.

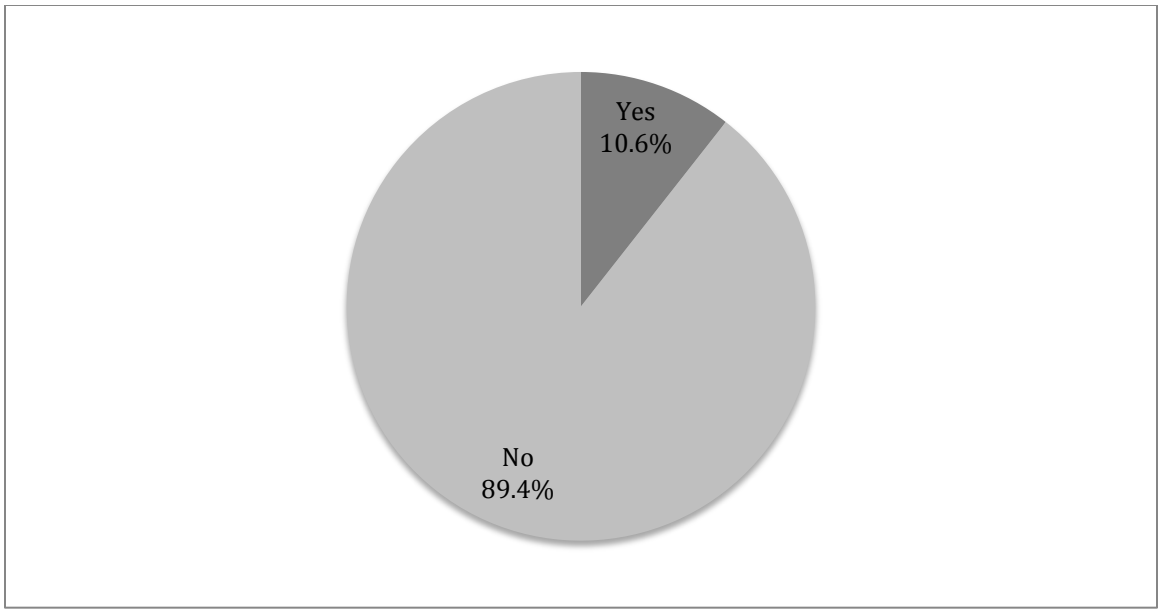

FIGURE 5. Response to "have you ever smoked cigarettes, even if only 1-2 puffs?"

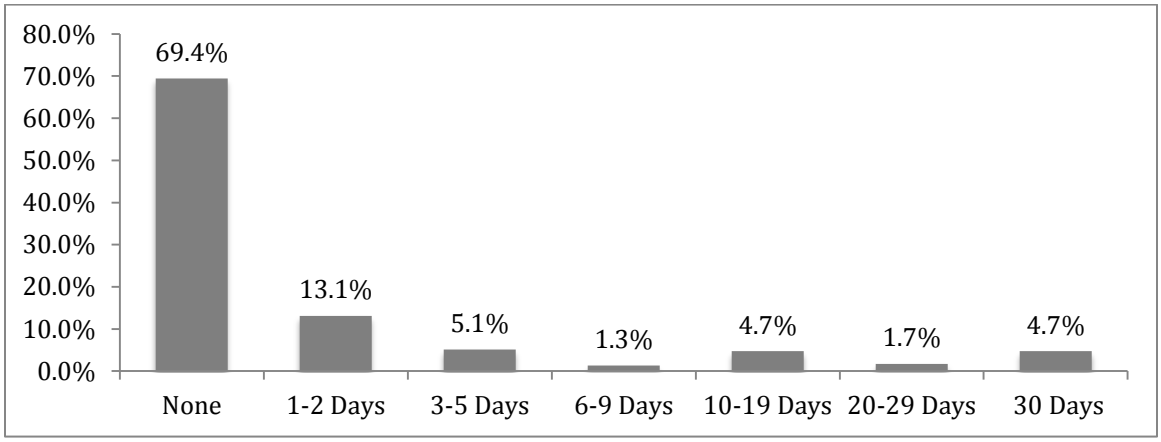

FIGURE 6. Response to "in the past 30 days, how many days have you smoked?"

The independent variables being studied were also evaluated as a frequency. The independent variable for Hypothesis 1 is the amount of time an adolescent has adult supervision after school. The CHIS 2011-2012 questionnaire asked adolescent

participants how often they have an adult present during after-school hours. The responses included always (43.6%), most of the time (40.1%), some of the time (12%), almost never (2.5%), and never (1.8%). This distribution can be seen in Figure 7.

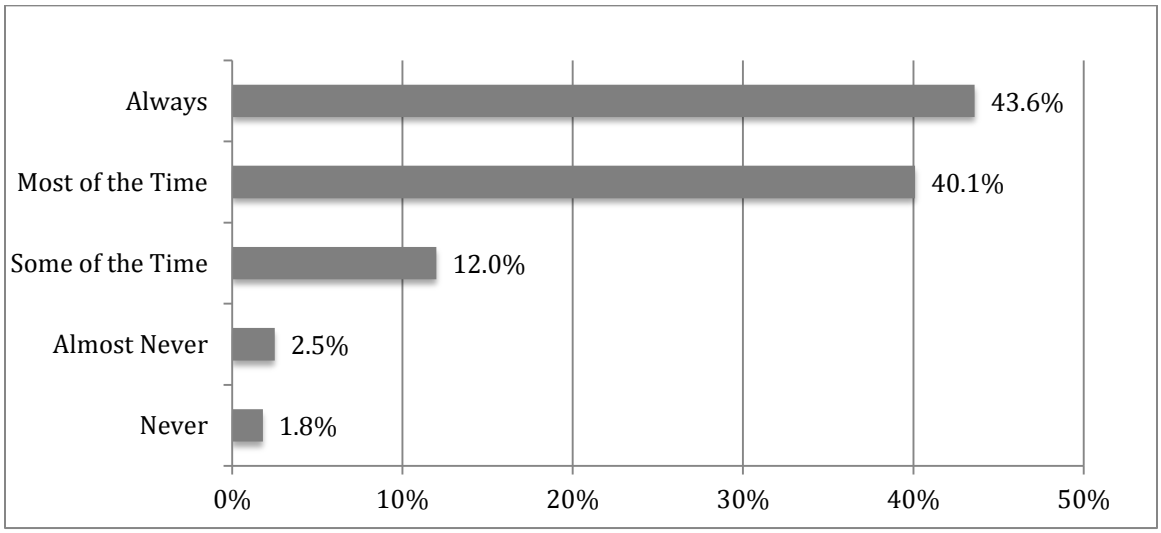

FIGURE 7. Response to "How often is there an adult present during after-school hours?"

The next independent variable for Hypothesis 2 is the level of school support. This variable was evaluated on a range from 0-24 with 24 meaning high level of school support. And lastly, the independent variable for Hypothesis 3 is the adolescent's choice of a role model and who they want to be. The responses include family member (33.2%), athlete (22.4%), entertainer (17.7%), teacher (6.2%), friend (7.9%), other (7.1%), historical figure (3.7%), literary author/character (0.5%), and writer/author (1.3%). These results can be seen in Figure 8. Because all three hypotheses have an ordinal dependent variable (the number of days smoked cigarettes), the one-way analysis of variance, or ANOVA test, was utilized for testing each hypothesis. The ANOVA test is a

statistical model that analyzes data between group means and their associated variations between groups (Shi, 2007). Simply, it determines whether or not there is difference between groups over some variable.

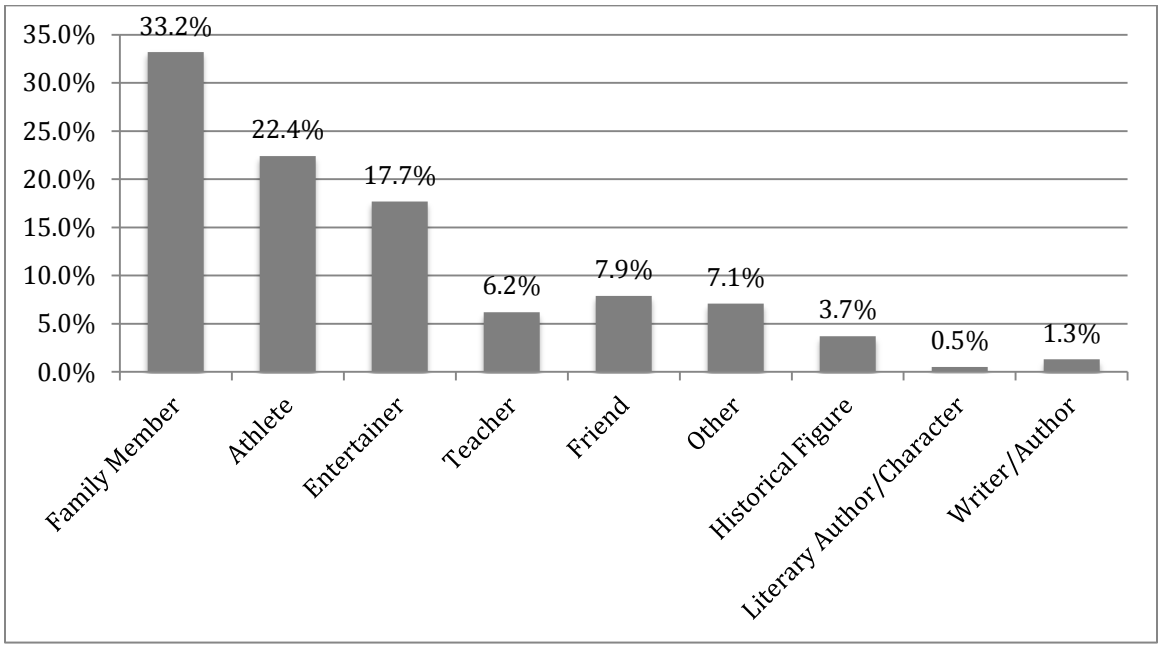

FIGURE 8. Response to "Who do you admire and want to be like?"

Hypothesis Testing

Hypothesis 1 predicted that adolescents who have adult supervision after school smoke less than those with no adult supervision. The results of the ANOVA test for Hypothesis 1 can be found in *Table 3*. The dependent variable, number of days smoked in the past 30 days, was evaluated against the independent variable, how often an adult is around during after-school hours. An analysis of variance showed that the effect of adult supervision after school was not significant, $F(4,292) = 1.675$, $p = .156$. The ANOVA test produced a p-value of .156 meaning that the relationship is not statistically significant

and we fail to reject the null hypothesis. In the ANOVA chart provided in Figure 9, results showed that the less time an adult is around after school hours, the more likely an adolescent is to smoke cigarettes.

TABLE 3. ANOVA Table for Hypothesis 1

ANOVA					
# OF DAYS SMOKED CIGARETTES IN PAST 30 DAYS					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	17.592	4	4.398	1.675	.156
Within Groups	766.650	292	2.626		
Total	784.242	296			

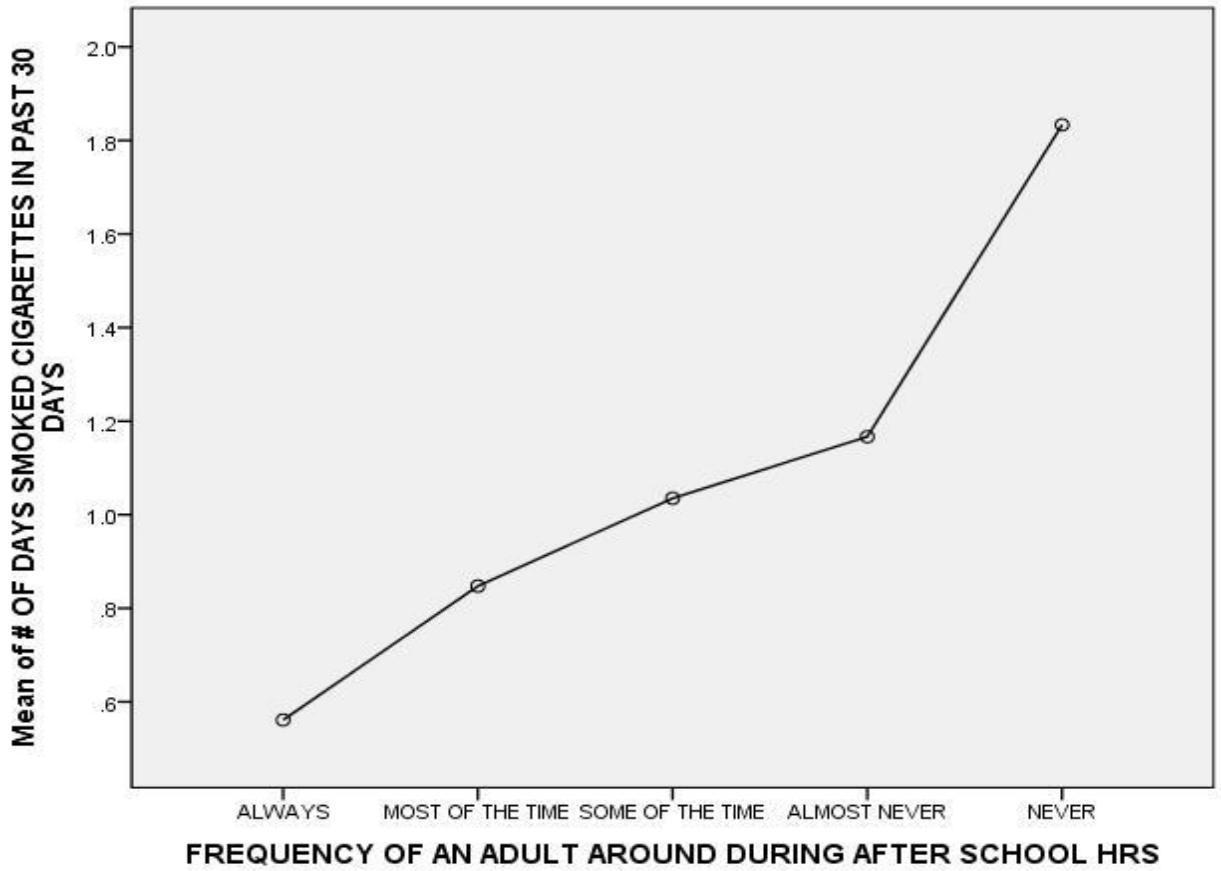

FIGURE 9. ANOVA graph for hypothesis 1.

Hypothesis 2 predicted that students with low levels of school support are more likely to smoke. The results of the ANOVA test for Hypothesis 2 can be found in Table 4. The dependent variable, number of days smoked in the past 30 days, was evaluated against the design variable, level of school support. An analysis of variance showed that the variable, level of school support, was not significant, $F(6,290) = .563$, $p = .759$. The ANOVA test produced a *p*-value of .759 meaning that the relationship is not statistically significant and that we fail to reject the null hypothesis. As can be seen in Figure 10, the more days smoked in a period of 30 days shows lower levels of school support.

TABLE 4. ANOVA table for Hypothesis 2

ANOVA					
SCHOOL SUPPORT SCALE (SSS)					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	47.887	6	7.981	.563	.759
Within Groups	4109.009	290	14.169		
Total	4156.896	296			

Hypothesis 3 predicted that adolescents that identified entertainer role models have a higher chance of smoking. The results of the ANOVA test for Hypothesis 3 can be found in Table 5. The dependent variable, number of days smoked in the past 30 days, was evaluated against the independent variable, the adolescent's choice of role model. The ANOVA test produced a p-value of .014 meaning that the relationship is statistically significant and that we can reject the null hypothesis. An analysis of variance showed that the variable of adolescent's choice of role model was significant, $F(8,167) = 2.505$, $p = .014$.

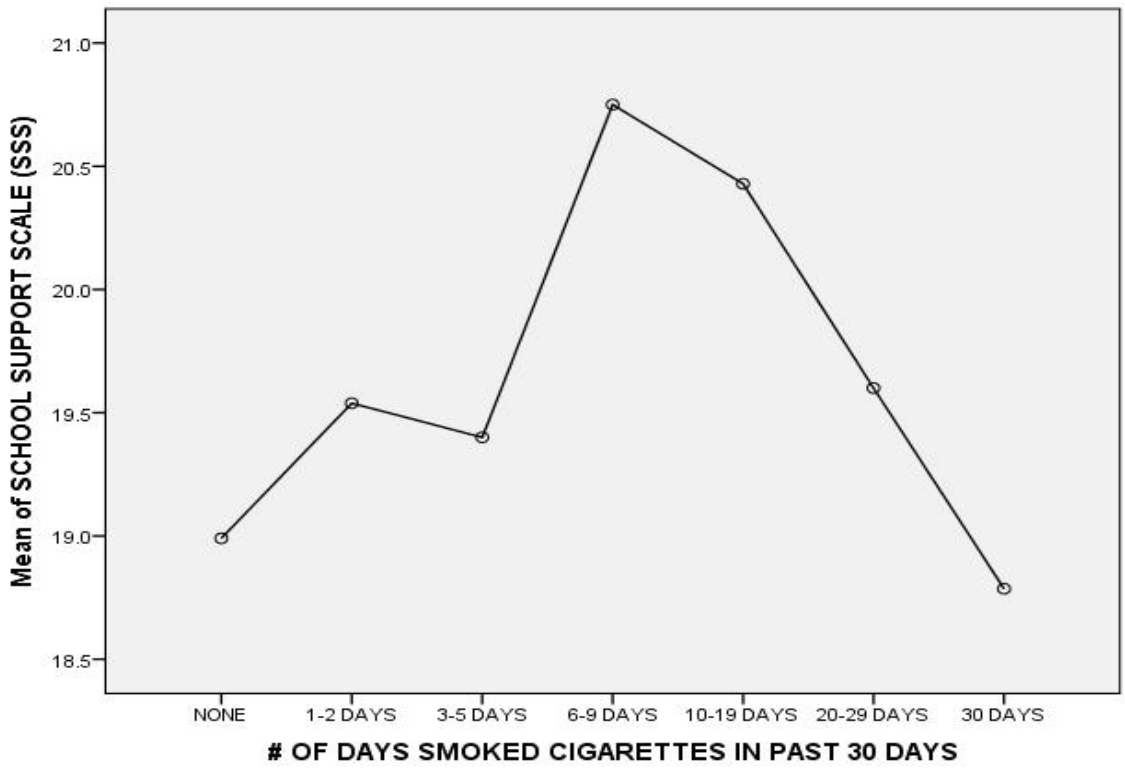

FIGURE 10. ANOVA Graph for Hypothesis 2.

As can be seen in Figure 11, adolescents who admire entertainer role models do not show higher numbers of days smoked, rather than the other categories (e.g., teachers, writer/author, and literary author/character) have higher rates.

TABLE 5. ANOVA Table for Hypothesis 3

ANOVA					
# OF DAYS SMOKED CIGARETTES IN PAST 30 DAYS					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	31.811	8	3.976	2.505	.014
Within Groups	265.075	167	1.5.87		
Total	296.886	175			

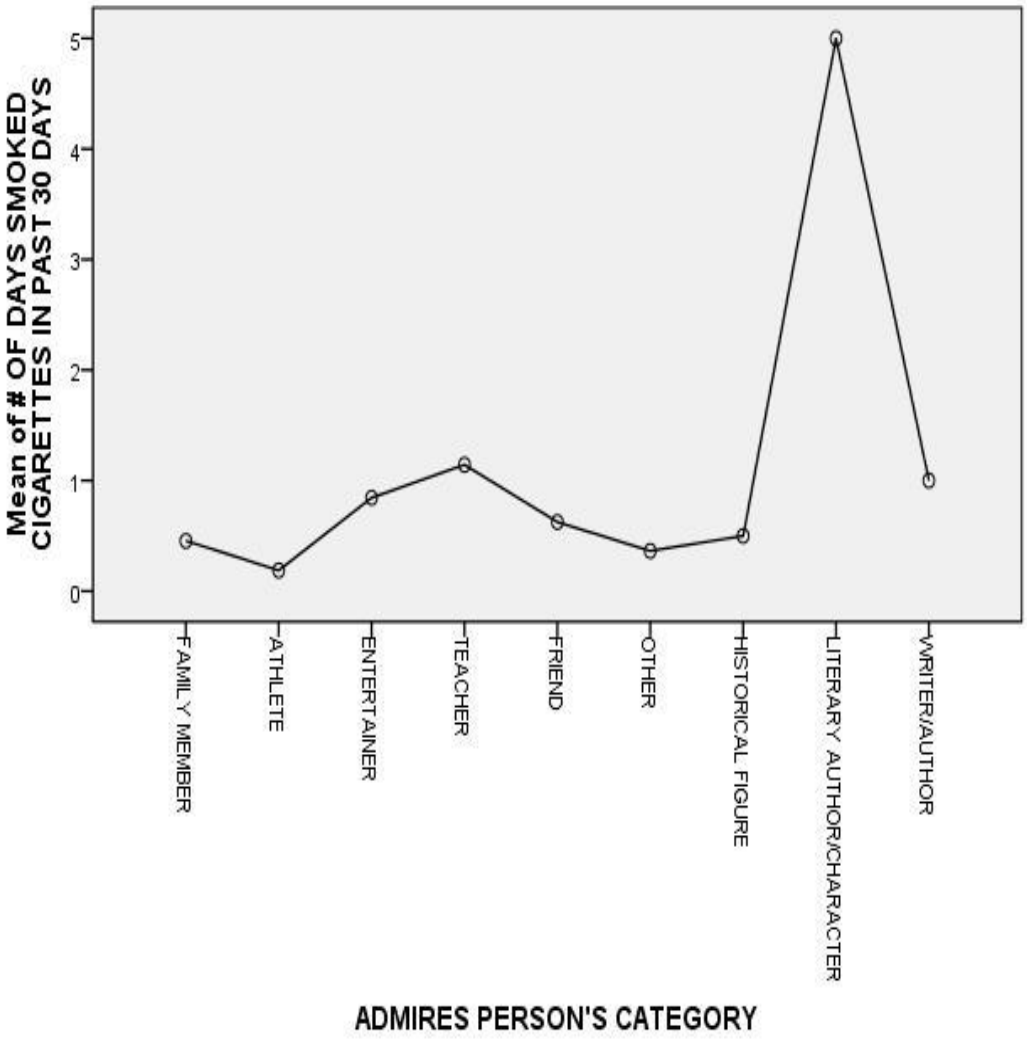

FIGURE 11. ANOVA graph for hypothesis 3.

TABLE 6. Results of Statistical Analysis

Hypothesis	Independent Variable	Dependent Variable	Statistical Test	P-Value
Adolescents who have adult supervision after school are less likely to smoke than those with no adult supervision.	Hours of adult supervision	Number of days smoked in the past 30 days	ANOVA	.156
Students with low levels of school support smoke more.	Level of school support	Number of days smoked in the past 30 days	ANOVA	.759
Adolescents that identify entertainer role models have a higher chance of smoking.	Adolescent's choice of role model	Number of days smoked in the past 30 days	ANOVA	.014

CHAPTER 4

DISCUSSION

The purpose of this paper was to evaluate variables that researchers have presented as significant sources of adolescent smoking. Three major areas of interest acted as independent variables against the dependent variable of smoking rates among teens age 12-17: family and peer influences, school and community programs, celebrity role models and media campaigns. The previous literature presented here dated no earlier than 2009 making the literature review current and relevant. The author was able to test the impact of family influence, school support, and entertainer role models on adolescent smoking. It has been found that individuals who begin smoking at a younger age have a high chance of continuing that habit into adulthood (CDC, 2014a; Morean et al., 2014). Smoking has been established as one of the most dangerous bad habits, which is known to produce severe chronic diseases and often times death. It would be valuable for the health of any society to curb adolescent smoking rates and uncover the main factors that cause teens to try tobacco products.

Three hypotheses were developed based on the literature that was studied. Out of these three hypotheses, only one proved to be statistically significant. Hypothesis 1 and 2 produced p-values greater than .05 meaning that the author failed to reject the null hypothesis. However, Hypothesis 3 produced a p-value less than .05 meaning that the author was able to reject the null hypothesis. A p-value less than the significance level of

.05 means that the average differs more than would be expected by chance alone while a higher significance level signifies that the difference in means were not large enough to rule out chance or sampling error. Although current literature has previously found significant results among these studied variables, this study was not able to identify a significantly correlated relationship with the exception of role models. Nonetheless, each hypothesis produced an ANOVA table where there appears to be slight relationships between the independent and dependent variables of the studied population. Although there are slight connections between the factors, the study did not produce results that were statistically significant.

Hypothesis 1 evaluated adult supervision and its relationship to the number of days that an adolescent smokes in a 30-day period. The ANOVA graph for Hypothesis 1 shows that the frequency of smoking steadily increases when time spent unsupervised also increases but the p-value produced by the ANOVA test was .156. Hypothesis 2 saw similar results in that the ANOVA graph showed higher smoking rates for the adolescents with lower levels of school support. This could mean that adolescents who do not feel noticed, cared for, or listened to smoke more than students who feel more support from their teachers. Regardless, the p-value was .759, which means the relationship was not proven to be statistically significant. Hypothesis 3 did produce significant results with a p-value of .014. While this test was significant, the findings in the ANOVA chart showed that the greatest connection with the frequency of smoking was having a literary author/character as a role model. Although those adolescents who identified literary author/character as their role model were higher than the other categories, there were only 8 observations making these results spurious and due to chance. These findings should

be evaluated further as most studies on the influences of role models and teen smoking focus on movie and television entertainers.

The limitations of this study may explain why the hypotheses were not found to be statistically significant. The study was limited to the data that were publically available through the CHIS 2012 data set. The author developed hypotheses based on the questions asked in the random phone survey, which may not have been structured in the most efficient way for studying adolescent smoking rates. The most inhibiting factor was the small sample size of adolescents that admitted to using tobacco products in the phone survey. Of the 2,799 adolescents studied, only 10.6% of the participants answered yes to having ever smoked cigarettes. It is possible that adolescents who have experimented with cigarettes or other tobacco products may not have answered honestly to the questions relating to tobacco use. CHIS requires that an adult guardian must consent to letting their child age 12-17 answer the phone questionnaire. Some adults may have chosen to listen to the interview while their adolescent answered questions, which could have played a factor in the adolescent's honesty to the more personal questions such as smoking habits and how often they are supervised after school. A larger sample size of adolescents who smoke or have tried tobacco products would have provided a stronger relationship between each variable. The small sample size acted as a limitation in regards to being able to effectively answer the research questions.

The CHIS 2012 produces cross-sectional data, which only captured information from a certain point in time from a limited group of people. Although the CHIS questionnaire does capture information such as racial background and household income, the data does not go beyond that point in time of when the questions were asked. Studies

that try to uncover the reason for adolescent smoking should also incorporate more longitudinal and case control studies where the participants are monitored over a period of time. In addition to the limited access of information, the data used were from the 2012 survey, which may have changed in the past two years. It is possible that there are new trends or factors that could alter the results of the questions asked.

In addition to these limitations, there were also limitations with the proxy variables chosen from the CHIS data analysis. The author was only able to go as far as the questions asked in the phone questionnaire. For Hypothesis 3, having an entertainer role model did not necessarily mean that this was the actual cause of a good or bad behavior, in this case smoking cigarettes. However, it was the most relevant question from the given data set. There was also a lack of questions regarding media influence and adolescent habits regarding social media, in addition to other outlets of advertising and virtual campaigns. After finding research on how influential the media can be on adolescent smoking rates, CHIS should consider incorporating more detailed questions in regards to media access and usage.

Even though this study had limitations, the author was able to express the need for research regarding adolescent smoking rates and various external factors. It is suggested for future studies that researchers use a larger sample size of adolescents who smoke. In addition, researchers should develop questions that specifically deal with smoking habits and allow participants to explain their answers with more qualitative information. More relevant findings may have been obtained by conducting focus groups and longitudinal studies with participants representative of the sample. A focus group could have been conducted on each of the topics presented in this paper. Further studies should also take

into consideration the various racial and ethnic groups, which may reveal varying smoking habits among adolescents. In addition, future studies should include multivariate analysis to account for the influence of many factors at the same time. It is vital that research continues on adolescent tobacco use in order to prevent smoking rates from rising. There is a large amount of research on a number of familial, social, and environmental factors associated with adolescent smoking rates. By continuing these studies and remaining current with changes will allow for anti-smoking advocates to target specific factors that lead to adolescent smoking.

To conclude, smoking is a detrimental habit to society that is highly dangerous to one's health and over all well-being. Whether through family and peer influences, school and community programs, or celebrity role models and media campaigns, researchers need to focus on factors that most directly influence adolescents age 12-17 to try tobacco products. With greater access to information and media, adolescents are now more than ever exposed to enticing tobacco products and cigarettes. As the Internet and social media sites become more prevalent forms of communication, researchers need to remain current and think towards the future. This study is just one sample of the many types of factors that can influence an adolescent to try smoking and to continue that habit into adulthood.

REFERENCES

REFERENCES

Adams, M.L., Jason, L.A., Pokorny, S., & Hunt, Y. (2013). Exploration of the link between tobacco retailers in school neighborhoods and student smoking. *Journal of School Health, 83*(2), 112-118. doi:10.1111/josh.12006.

Apollonio, D.E., & Malone, R.E. (2010). The "We Card" program: Tobacco industry "Youth Smoking Prevention" as industry self-preservation. *American Journal of Public Health, 100*(7), 1188-1201. doi:10.2105/AJPH.2009.169573.

California Department of Public Health. (2014). *California Health Interview Survey (CHIS)*. Retrieved from http://www.cdph.ca.gov/data/surveys/Pages/CHIS.aspx.

California Health Interview Survey. (n.d.). *About*. Retrieved from http://healthpolicy.ucla.edu/chis/about/Pages/about.aspx

California Health Interview Survey. (n.d.). *2011-2012*. Retrieved from http://healthpolicy.ucla.edu/chis/data/public-use-data-file/Pages/2011-2012.aspx

Centers for Disease Control and Prevention. (2014a). *Cigarette smoking among U.S. high school students at lowest level in 22 years*. Retrieved from http://www.cdc.gov/media/releases/2014/p0612-YRBS.html.

Centers for Disease Control and Prevention (2014b). *Smoking and tobacco use.* Retrieved from http://www.cdc.gov/tobacco/data_statistics/fact_sheets/youth_data/tobacco_use/index.htm

Champion, K.E., Newton, N.C, Barrett, E.L., & Teesson, M. (2013). A systematic review of school-based alcohol and other drug prevention programs facilitated by computers or the Internet. *Drug and Alcohol Review, 32*(2), 115-123. doi:10.1111/j.1465-3362.2012.00517.x.

Dietz, N.A., Westphal, L., Arheart, K.L., Lee, D.J., Huang, Y., Sly, D.F., & Davila, E.(2010). Changes in youth cigarette use following the dismantling of an antitobacco media campaign in Florida. *Preventing Chronic Disease, 7*(3), 1-3. Retrieved from http://www.cdc.gov/ped/issues/2010/may/09_0157.htm.

Do celebrity role models promote teen substance abuse? (2012, April). *Addiction Treatment Magazine,* 1-3. Retrieved from http://www.addictiontreatment magazine.com/culture-media/celebrities-influence-teen-substance-abuse/.

Dryden, C. (2014, July 22). Manhattan Beach kicks off informational campaign for smoking ban. *Daily Breeze.* Retrieved from http://www.dailybreeze.com/social-affairs/20140722/manhattan-beach-kicks-off-informational-campaign-for-smoking-ban.

Farrelly, M.C., Arnold, K.Y., Juster, H.R., & Allen, J.A. (2013). Quantifying the effect of changes in state-level adult smoking rates on youth smoking. *Journal of Public Health Management and Practice, 20*(2), E1-E6. doi:10.1097/PHH.0b013e31829 aa28e.

Fletcher, J.M., & Sindelar, J.L. (2012). The effects of family stressors on substance use initiation in adolescence. *Review of Economics in the Household, 2012*(10), 99-114. doi:10.1007/s11150-010.9116-z.

Freeman, D., Brucks, M., Wallendorf, M., Boland, W. (2008). Youths' understandings of cigarette advertisements. *Addictive Behaviors, 34*(2009), 36-42. doi:10.1016/j. addbeh.2008.007.

Grucza, R.A., Plunk, A.D., Hipp, P.R., Cavazos-Rehg, P., Krauss, M.J., Brownson, R.C., & Bierut, L.J. (2013). Long-term effects of laws governing youth access to tobacco. *American Journal of Public Health, 103*(8), 1493-1499. doi:10.2105/AJPH.2012.301123.

Hanewinkel, R., Isensee, B., Sargent, J.D., & Morgenstern, M. (2010). Cigarette advertising and adolescent smoking. *American Journal of Preventive Medicine, 38*(4), 359-366. doi:10.1016/j.amepre.2009.12.036.

Heatherton, T.F., & Sargent, J.D. Does watching smokng in movies promote teenage smoking? *Current Direction in Psychological Science, 18*(2), 63-67. doi: 10.1111/j.14678721.2009.01610.x.

Hertel, A.W., & Mermelstein, R.J. (2012). Smoker identity and smoking escalation among adolescents. *Health Psychology, 31*(4), 467-475. doi:10.1037/a0028923.

Huang, G.C., Soto, D., Fujimoto, K., & Valente, T.W. (2014). The interplay of friendship networks and social networking sites: Longitudinal analysis of selection and influence effects on adolescent smoking and alcohol use. *American Journal of Public Health, 104*(8), 51-59. doi:10.2105/AJPH.2014.302038.

Hum, A.M., Robinson, L.A., Jackson, A.A., & Ali, K.S. (2011). Physician communication regarding smoking and adolescent tobacco use. *Pediatrics, 127*(6), 1368-1374. doi:10.1542/peds.2010-1195.

Lovato, C.Y., Zeisser, C., Campbell, H.S., Watts, A.W., Halpin, P., Thompson, M., … & Brown, S. (2010). Adolescent smoking: Effect of school and community characteristics. *American Journal of Preventive Medicine, 39*(6), 507-514. doi:10.1016/j.amepre.2010.08.019.

Mahabee-Gittens, E.M., Xiao, Y., Gordon, J.S., & Khoury, J.C. (2012). Continued importance of family factors in youth smoking behavior. *Nicotine & Tobacco Research, 14*(12), 1458-1466. doi:10.1093/nts/nts078.

Morean, M.E., Camenga, D.R., Kong, G., Cavallo, D.A., Schepis, T.S., & Krishnan-Sarin, S. (2014). Predictors of middle school students' interest in participating in an incentive-based tobacco prevention and cessation program in Connecticut. *Journal of Addiction, 2014*(915652), 1-6. Retrieved from http://dx.doi.org/10.1155/2014/915652.

Pepper, J.K., Cameron, L. D., Reiter, P.L., McRee, A.L., & Brewer, N.T. (2013). Non-smoking male adolescents' reactions to cigarette warnings. *PLOS One, 8*(8), e65533. doi:10.1371/journal.pone.0065533.

Pierce, J.P., White, V.M., & Emery, S. L. (2011). What public health strategies are needed to reduce smoking initiation? *Tobacco Control, 21*(1), 258-264. doi:10.1136 /tobaccocontrol-2011-050359.

Razaz-Rahmati, N., Nourian, S.R., & Okoli, C.T. (2011). Does household structure affect adolescent smoking? *Public Health Nursing, 29*(3), 191-197. doi:10.1111/j.1525-1446.2011.00979.x.

Richardson, A.K., Green, M., Xiao, H., Sokol, N., & Vallone, D. (2010). The young adult response to a youth-focused anti-smoking media campaign. *American Journal of Preventive Medicine, 39*(6). doi:10.1016/j.amepre.2010.08.007.

Shi, L. (2007). *Health services research methods (2nd ed.)*. New York, NY: Cengage Learning.

Simons-Morton, B.G., & Farhat, T. (2010). Recent findings on peer group influences on adolescent smoking. *Journal of Primary Prevention, 31*(4), 191-208. doi:10.1007 /s10935-010-0220-x.

Soneji, S., Lewis, V.A., Tanski, S., & Sargent, J.D. (2012). Who is most susceptible to movie smoking effects? Exploring the impacts of race and socio-economic status. *Addiction, 107*(12), 2201-2209. doi:10.111/j.1360-0443.2012.03990.x.

Sterling, K.L., Moore, R.S., Pitts, N., Duong, M., Ford, K.H., & Eriksen, M.P. (2013). Exposure to celebrity-endorsed small cigar promotions and susceptibility to use among young adult cigarette smokers. *Journal of Environmental and Public Health, 2013*(520286), 1-6. doi: 10.1155/2013/520286.

Stern, S., & Morr, L. (2013). Portrayals of teen smoking, drinking, and drug use in recent popular movies. *Journal of Health Communication, 18*, 179-191. doi: 10.1080/10810730.2012.688251.

Substance Abuse and Mental Health Services Administration (2012). *The NSDUH report: Trends in cigarettes use among adolescents and young adults*. Rockville, MD: Center for Behavioral Health Statistics and Quality.

Tanski, S.E., Stoolmiller, M., Gerrard, M., & Sargent, J.D. (2012). Moderation of the association between media exposure and youth smoking onset: Race/ethnicity, and parent smoking. *Prevention Science, 13*(1), 55-63. doi:10.1007/s11121-011-0244-3.

Veeranki, S.P., Mamudu, H.M., Anderson, J.L., & Zheng, S. (2014). Worldwide never-smoking youth susceptibility to smoking. *Journal of Adolescent Health, 54*, 144-150. Retrieved from http://dx.doi.org/10.1016/j.adohealth.2013.07.036.

Woodgate, R.L., & Kreklewetz, C.M. (2012). Youth's narratives about family members smoking: Parenting the parent- it's not fair! *BioMed Central Public Health, 12*(1), 965-977. Retrieved from http://www.biomedcentral.com/1471-2458/12/965.